

Program Letter

Bureau of Storage Tank Regulation
December 2002

Cathodic Protection System Installation, Startup and Maintenance Competent Person Credentials (Revision – Update #2)

This program letter is an updated Commerce policy resulting from recent policy and program application modifications relating to individuals servicing cathodic protection systems. Comm 10 adopts several national corrosion protection (CP) standards including NACE RP0285 (1995 Edition), Recommended Practice, Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems and API Publication 1696, Cathodic Protection of Underground Petroleum Storage Tanks.

Comm 10 – Flammable and Combustible Liquid Code and Comm 5 – Credentials Code, at this date do not comprehensively address the technical competence of individuals responsible for the proper installation, startup, maintenance and repair of cathodic protection systems. Comm 5.85(5) requires a person who installs or supervises the installation of corrosion protection systems to be certified as an underground tank system installer. However, the provisions of NACE Recommended Practice RP0285 requires that engineered cathodic protection systems be installed, test evaluated, and maintained under the direction of persons competent in the field of corrosion protection. The definition of competent persons as stated in the NACE standard states: *“competent persons, who, by reason of knowledge of the physical sciences and the principles of engineering and mathematics acquired by professional education and related practical experiences, are qualified to practice corrosion control on buried metallic structures.”* A current problem exists in the field where many individuals with installer certification possess little or no knowledge of cathodic protection and are performing cathodic protection upgrades and maintenance. Unfortunately, in this instance, certification as an installer can give the false impression that someone is qualified. Over the past several years the Department has become aware of a significant number of systems that have not providing adequate protection or were causing interference with adjacent systems or structures. The cathodic protection system is engineered to provide the correct amount of protection, too little or too much protection can potentially be as deficient as no protection. The Comm 10 Code revision (Comm 10.51 (2)(b)) effective August 1, 2002, requires that specialists retained for the purpose of designing a CP system or determining that the site is non-corrosive for the life of the system, must make at least one personal visit to the site during the design stage.

The Federal EPA and NACE organizations have both recognized similar concerns and have issued information and policy letters on the need to maintain technical competence and proficiency when installing, starting up (commissioning), and maintain cathodic protection systems. Because cathodic protection is engineered, the installation and energizing of the system must be under the supervision of a trained and qualified individual to ensure that the installation is done in accordance with specifications, adequate protection is attained efficiently, and more importantly does not interfere with other systems. The general petroleum equipment contractor typically is not qualified to determine whether or not supplementing a system is

practical. Likewise, the maintenance of such systems requires proper assessment of the existing system's performance. Proper recordkeeping and testing by a qualified individual is vital in determining continuance of effective corrosion control or through test data interpretation, an indicator of potential problems. Also, because no standard can account for every situation and site specific environmental and soil conditions, experience and training in corrosion control is warranted.

It is therefore Commerce policy that to safely protect what is currently in the ground, to prevent interference with other adjacent CP systems, and to prevent any negative potentials in new impressed current system installations, at a minimum, a registered NACE professional holding NACE *Senior Corrosion Technologist* credentials verify proper installation operation and perform impressed current corrosion protection system start-up. An individual possessing NACE *Corrosion Technician* certification is acceptable to conduct ongoing system maintenance if directly supervised by a *Corrosion Technologist, Senior Corrosion Technologist, Cathodic Protection Specialist, or Corrosion Specialist*.

Previously, the Department has followed the EPA position that "being a professional engineer or holding a NACE certification is not a requirement under the regulation for a Cathodic Protection Tester. However, the 40 CFR 280.12 EPA definition of "Cathodic protection tester" means *a person who can demonstrate an understanding of the principles and measurements of all common types of cathodic protection systems as applied to buried or submerged metal piping and tank systems. At a minimum, such persons must have education and experience in soil resistivity, stray current, structure-to-soil potential, and component electrical isolation measurements of buried metal piping and tank systems.*

Over the past years the Department and tank owners have experienced CP testing activities conducted by individuals who had limited competency in corrosion and corrosion protection assessment and in some cases did not have proper testing equipment. The Department has continued to implement the guidelines set forth by the Federal EPA by recognizing the Steel Tank Institute (STI) and the NACE International credentials. Cathodic protection testers must maintain and provide either the associated STI *Certification for UST System Cathodic Protection Monitoring* certification or the NACE *Cathodic Protection Tester or Corrosion Technician*, or higher level certification. The following two tables express the roll that the respective STI and NACE credentialed individuals may take in cathodic corrosion protection system work.

STI Certification for UST System Cathodic Protection Monitoring

<i>EPA Definition(40 CFR) 280.12</i>	<i>Expertise/Qualifications</i>
Cathodic Protection Tester (The EPA definition of cathodic protection tester does not require any certification; however, persons holding these NACE certification levels are viewed by EPA as fully meeting regulatory requirements.	<ul style="list-style-type: none"> ◆ Understand the basics of corrosion and cathodic protection theory ◆ Conduct insulator tests and identify shorts in CP systems ◆ Use test instruments to perform a variety of field tests and take rectifier readings ◆ Determine the quantity of anodes required to upgrade an sti-P3 system using STI R972-01. ◆ Perform the periodic surveys such as structure to soil (including IR free readings), soil resistivity, coupon tests, continuity and isolation testing and rectifier readings. ◆ Knowledge of reference cells and their installation and testing. ◆ Safety requirements ◆ Basic location mapping, report preparation, and record keeping (including EPA)

NACE Certification Levels For UST Corrosion Protection

<i>EPA Definition (40 CFR) 280.12</i>	<i>NACE Certification</i>	<i>Expertise/Qualifications in corrosion control of USTs</i>
Corrosion Expert (The EPA definition requires NACE certification unless the person is a registered PE with certification or licensing that includes education and experience in corrosion control of buried or submerged metal piping systems and metal tanks.)	Corrosion Specialist	<ul style="list-style-type: none"> • Cathodic protection (includes all areas of expertise under Cathodic Protection Specialist) • Coatings and linings • Metallurgy • Plastics (non-metallic materials) • Inhibitors (environmental treatment) • Corrosion assessment • Stray current or cathodic interference testing and analysis • Corrosion site surveys • Corrosion control designs and recommendations • Work/education is the same as for Cathodic Protection Specialist plus a Specialty Area Certification.
	Level 3 – Cathodic Protection (CP) Specialist	<ul style="list-style-type: none"> • System design and specifications • Installation supervision • System testing/commissioning • Stray current/cathodic interference testing and analysis • System maintenance • Cathodic protection assessment • Cathodic protection recommendations • Analysis of cathodic protection feasibility • Cathodic protection installation permits/licenses • Four years CP work experience in responsible charge plus CP level 2 certification, or equivalent training plus one of the following: <ul style="list-style-type: none"> - Eight additional years CP work experience plus 2 years post-high school training in math or science from an approved technical/trade school - 2 additional years CP work experience plus 4-year engineering or physical science degree - Engineer-in-training (EIT) registration or equivalent. - Professional engineer (PE or P. Eng) or equivalent registration. - Bachelor's degree in engineering or physical sciences and an advanced degree in engineering or physical science that required a qualification exam.

Cathodic Protection Tester (The EPA definition of cathodic protection tester does not require any certification; however, persons holding these NACE certification levels are viewed by EPA as fully meeting regulatory requirements.	Level 2 – Cathodic Protection Technician	<ul style="list-style-type: none"> • Perform advanced field tests and evaluate the results • Verify stray current interference • Understand AC voltage and its mitigation • Maintain advanced documentation and records, including data plotting • Conduct and understand the importance of periodical surveys, including IR Free readings and polarization decay tests • Install, repair, modify and test rectifiers and component parts such as circuits • Collect data on ER probes • Three years CP work experience plus high school diploma or GED plus CP level 1 certification or equivalent training –or– One year CP work experience plus 4-year physical science or engineering degree plus CP level 1 certification or equivalent training –or– Two years CP work experience plus 2-year post high school training from an approved math or science technical/trade school plus CP level 1 certification or equivalent training
	Level 1 – Cathodic Protection Tester	<ul style="list-style-type: none"> • Perform atmospheric corrosion inspections • Understand the basics of corrosion and cathodic protection theory • Conduct insulator tests and identify shorts in CP systems • Use test instruments to perform a variety of field tests and take rectifier readings • Install galvanic anodes and test • Read shunts and understand their use in rectifiers, bonds, and anodes • Perform the periodic surveys such as structure to soil, soil resistivity, coupon tests, offshore platform and riser surveys, rectifier readings, and surveys of bonds and diodes • Knowledge of reference cells and their installation, testing • and safety requirements • Basic location mapping, report preparation and record keeping • Six months cathodic protection work experience plus high school diploma or GED

	Senior Corrosion Technologist	<ul style="list-style-type: none"> • Installation supervision • System testing and commissioning • System maintenance • Evaluation of system performance • Eight years corrosion work experience, including four years in responsible charge -or- • Bachelor's Degree in Physical Science or Engineering plus four years corrosion work experience in responsible charge.
	Corrosion Technologist	<ul style="list-style-type: none"> • Installation supervision • System testing • System maintenance • Installation work • Routine inspections • Preliminary data analysis • Minimum of four years corrosion work experience.
	Corrosion Technician*	<ul style="list-style-type: none"> • Routine system testing • System maintenance • Installation work • Routine inspections • Installation work • Minimum of two years corrosion work experience

* NACE requires a *Corrosion Technician* performing as a CATHODIC PROTECTION TESTER be directly supervised by a *Corrosion Technologist, Senior Corrosion Technologist, Cathodic Protection Specialist, or Corrosion Specialist*.